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ENDOGEAN AND CAVERNICOLOUS COLEOPTERA OF THE BALKANS. IX. NOTES ON *TYCHOBYTHINUS* (STAPHYLINIDAE: PSELAPHINAE) FROM THE ADRIATIC COAST, WITH A DESCRIPTION OF A NEW SPECIES

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Tychobythinus lukici, a new cavernicolous species of the tribe Bythinini, closely related to *T. neumanni* is described from the island Brač, Croatia. The actual knowledge on all Croatian *Tychobythinus* is discussed and summarized.

Key words: Coleoptera, Staphylinidae, Pselaphinae, Bythinini, *Tychobythinus*, biospeleology, Croatia, taxonomy

Hlaváč, P. & Jalžić, B.: Endogejski i špiljski Coleoptera Balkana. IX. Bilješke o rodu *Tychobythinus* (Coleoptera: Staphylinidae: Pselaphinae) s jadranske obale s opisom nove vrste. Nat. Croat., Vol. 18, No. 2., 221–228, Zagreb.

U radu se opisuje nova špiljska vrsta tribusa Bythinini s otoka Brača, *Tychobythinus lukici*, usko srodna s vrstom *T. neumanni*. Raspravlja se i daje pregled svih predstavnika roda *Tychobythinus* u Hrvatskoj.

Ključne riječi: Coleoptera, Staphylinidae, Pselaphinae, Bythinini, *Tychobythinus*, biospeleologija, Hrvatska, taksonomija

INTRODUCTION

Tychobythinus Ganglbauer is a large holarctic genus of the tribe Bythinini, with 83 species known from the Palaearctic region and five species from the Nearctic region (LÖBL & BESUCHET, 2005; BESUCHET, 2008; NEWTON & HLAVÁČ, pers. database). The Palaearctic distribution of *Tychobythinus* practically comprises the whole region; the

genus is known from northern Africa, Spain and whole southern Europe, Caucasus, up to China and Japan. Most species of the genus, except for *Tychobythinus glabratus* Rye, 1870 which is known from a large part of the southern Europe, are usually endemic to relatively small areas.

Despite very rich endogean and cavernicolous fauna, on the Adriatic coast of Croatia, Bosnia and Herzegovina, and Montenegro only six species have been recorded so far, and knowledge on the genus of this area is very poor. All species were subject of the revision of *Tychobythinus* of ex-Yugoslavia countries (KARAMAN, 1954) and this was practically the last time the genus from this area was mentioned, while cavernicolous species were catalogued by HLAVÁČ *et al*. (2005). In her revision KARAMAN erected four new genera, *Globobythus*, *Crenobythus*, *Odontobythus* and *Microbythus*, all later synonymized with *Tychobythinus* by BESUCHET (1961, 1962). She also described one new species, *Collartia croatica* Karaman, now also placed in *Tychobythinus*.

The aim of this paper is to summarize our knowledge on all species occurring on the Adriatic coast and to describe a new cavernicolous species, closely related to *Tychobythinus neumanni* J. Müller, 1909.

The following abbreviations are used in the text: CNHM – Croatian Natural History Museum, Zagreb; CPH – coll. Peter Hlaváč.

Tychobythinus lukici n. sp.

(Figs. 1, 2, 4)

Etymology: Named after Marko Lukić, Zagreb, young biospeleologist who started his study on cavernicolous Collembola and collector of the holotype specimen.

Material studied: HOLOTYPE, 1♂: CROATIA: Brač, Činjadra špilja, Nerežišće, 22.10.2007, M. Lukić lgt. / HOLOTYPE *Tychobythinus lukici* sp. n. P. Hlaváč det., 2008. (CNHM). PARATYPES, 3♀: same data as holotype but collected on 5.1.2008 by H. Bilandžija (CNHM, CPH).

Description. Body shiny, light, reddish-brown, with long, sparse setation, setae very long on sides of elytra and abdomen, disc of elytra lacking setae, antennae, legs and maxillary palpi slightly lighter, length 1.2–1.35 mm, maximal width of elytra 0.55–0.58 mm. Head rhombic, with well-developed antennal tubercules, at level of eyes 1.1 times as wide as long, rostrum narrow, head 2.1–2.3 times as wide as rostrum, neck wide; eyes large, diameter equal to width of scape at base, vertexal foveae well defined, frons between antennal tubercles with deep, short excavation, reaching vertexal foveae; surface of head irregularly wrinkly, maxillary palpi short, palpomeres II–III granulate, palpomere IV (0.21 mm) regularly and densely pubescent, slightly shorter than palpomere II which is pedunculate; antennae short, about 0.6–0.7 mm long, exceeding base of elytra when bent backwards, scape four times as long as wide, slightly expanded apically, about 3.33 times as long as pedicel, pedicel oval, 1.2 times as long as wide, antennomere III as long as pedicel, strongly expanding from base to apex, antennomeres IV–VIII abouth same length, with more or less developed internal lateral protuberance in such a way that they are forming an arch, antennomeres IX and X transversally oval, X twice as long as IX, antennomere IX 2.5 times as wide as long, antennomere X 1.75 times as wide as long, terminal antennomere about 1.33 times as short as scape, pointed at apex.

Pronotum 1.13 times as wide as long and 1.1 times as wide as head, slightly longer than head, widest in the apical third, lateral antebasal foveae well-defined joint by well-defined antebasal sulcus.

Elytra 1.16 times as wide as long, slightly widened from base to apex, 1.5 times as long (at suture) as pronotum, two basal foveae present on each elytron, sutural stria well-defined through the whole length of elytra.

Abdomen slightly narrower than elytra, first two visible tergites of the same length.

Legs slender, with all tibiae simple, posterior tibiae slightly curved in the apical third.

Aedeagus (Fig. 1) elongate, 0.46 mm long, almost symmetric, parameres pointed and separated at apex, with two pseudoapical setae of a different length, endophallous with sclerotized, at the apex fork-like corpuscle.

Sexual dimorphism: female very similar to male but with simple, unmodified antennae.

Differential diagnosis: *T. lukici* is very closely related to *T. neumanni*. Both species share strongly modified antennomeres III–X which is a quite unique feature in the genus *Tychobythinus*. *T. lukici* differs from *T. neumanni* by larger eyes and a wider rostrum, ratio width of head / width of rostrum = 2.07 whereas 2.5 for *T. Neumanni*.

Ecology: Činjadra špilja cave, XY30. The length of the cave is 83 m. In geological past it was probably a spring cave but today it is hydrologically passive. Subterranean spaces are of smaller dimensions. The floor is covered with rock debris, soil drifts and speleothem-like deposits. The entrance of the cave was used for sheep

Fig. 1. *Tychobythinus lukici* n. sp. in its habitat (Photo: M. Lukić)

and human shelter. *Tychobythinus* specimens were found under stones in the front part of the cave. Air temperature on October 22, 2007 was 15.2 °C and relative humidity 100%, on January 5, 2009 temperature was 15.1 °C and relative humidity again 100%. The following troglobionts were found in the cave: Gastropoda: *Spelaeoconcha polymorpha* A. J. Wagner, 1914, Isopoda: *Alpioniscus magnus* Frankenberger, 1938 (det. J. Bedek), Collembola: *Heteromurus nitidus* Templeton, 1835 (det. M. Lukić), Pseudoscorpiones: *Neobisium* sp., *Chtonius* sp., Aranea: *Nesticus eremita* Simon, 1879 (det. M. Pavlek) and Coleoptera: *Spelaeobates peneckei* J. Müller, 1903. (this cave is the type locality of this species)

Provisional key to the species of the genus *Tychobythinus* of the Adriatic coast

1 Antennae in males modified **2**
– Antennae in males simple **3**

2 Eyes punctiform, ratio width of head / width of rostrum = 2.5 ***T. neumanni***
– Eyes larger, diameter equal to width of scape at the base, ratio width of head / width of rostrum = 2.1–2.3 ***T. lukici***
3 Large species, about 1.5 mm long ***T. croaticus***
– Smaller species, not longer than 1.3 mm ***T. cavifrons, T. glabratus, T. latifrons***

Tychobythinus apfelbecki Ganglbauer, 1895: 834

The species was described within the genus *Bythinus* and placed by Karaman into a new genus *Microbythus*. The description was based on one female from Mt. Ivan planina, Lisin, near Sarajevo. KARAMAN (1954) gave another two records, one male from Jablanica in Herzegovina and one female from Mt. Učka in Istria. *Machaerites czernohorskyi* Reitter, 1902, which is a synonym of *T. apfelbecki* (BESUCHET & LÖBL, 2005: 314), was also described from Jablanica and Ivan planina. Record from Mt. Učka is very likely doubtful, and this statement is also supported by the fact that it is very difficult, if not impossible, to determine *Tychobythinus* species if only female is available. For the time being this species must be excluded from the fauna of Croatia.

Distribution: Bosnia and Herzegovina

Tychobythinus cavifrons Reitter, 1881: 214

The species was described as *Bythinus* and placed by Karaman into the genus *Tychobythus* [sic] which is a misspeling of *Tychobythinus*. The description was based on an unspecified number of specimens from the town of Knin in northern Dalmatia. Further localities are mentioned by KARAMAN (1954: 173) from B&H (Mostarsko Blato), Croatia (Split) and from Greece (island Kerkyra).

Distribution: Bosnia and Herzegovina, Croatia, Greece (Kerkyra)

Tychobythinus croaticus Karaman, 1954: 175

The species was described as *Collartia*. The description was based on three specimens collected in an unnamed cave near a spring close to Zagorska Mrežnica River in the vicinity of the town Ogulin. Since the only cave near Zagorska Mrežnica

Fig. 2. *Tychobythinus lukici*, habitus
Fig. 3. *Tychobythinus neumanni*, habitus

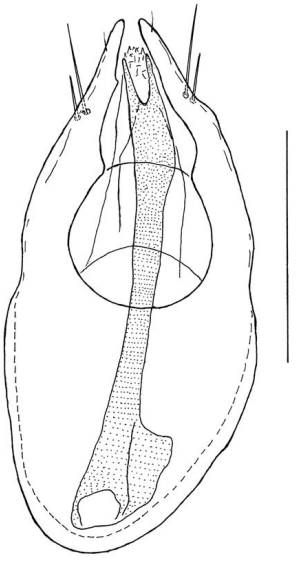

Fig. 4. *Tychobythinus lukici*, aedeagus, dorsal aspect, scale = 2 mm

spring is cave Zagorska peć, the *locus typicus* of *T. croaticus* is undoubtly this cave. Furthermore, the only recent record is: Croatia, Zagorska peć, Ogulin, Kordun region (HLAVÁČ *et al.*, 2005: 323)

Distribution: Croatia

Tychobythinus glabratus Rye, 1870: 33

The species was described as *Bythinus* and treated by Karaman as the genus *Bythinopsis*. *T. glabratus* is a widespread South European species with many synonymies (BESUCHET & LÖBL, 2005: 315). From Croatia it is known from Split and Kaštela near Split (KARAMAN, 1954). We can expect that this species can be found almost on the whole territory of Croatia when proper collecting technics are used.

New records: 3ex: YU-Kroatien, Dalmat. Küste, Drage b. Biograd, 22.8.1979, leg. Brachat.

Distribution: Belgium, Croatia, France, Great Britain, Germany, Italy, Slovenia, Switzerland

Tychobythinus latifrons J. Müller, 1902: 70

The species was described as *Bythinus* and treated by Karaman as the genus *Globobythus*. The description was based on one specimen sifted from the bank of the small river Jadro near Solin, Split. Further record is one male from Herceg Novi, Montenegro (KARAMAN, 1954: 181).

Distribution: Croatia, Montenegro

Tychobythinus neumanni J. Müller, 1909: 277

The species was described within *Bythinus* and treated by Karaman as the genus *Crenobythus*. The description was based on an unspecified number of specimens from a cave near Dubrovnik. KARAMAN (1954) provided the record of two males and one female from the cave Šipun. This is certainly the best known Croatian *Tychobythinus* and has been collected several times recently. The species is known from many caves on the southern Dalmatian coast, the island of Brač, Mt. Biokovo, Dubrovnik, southwards to Mt. Lovćen in Montenegro (HLAVÁČ *et al.*, 2005). The record from Montenegro: unknown cave above Splavište, Mt. Durmitor, canyon of the river Tara, Djurdjevića Tara is doubtful and should be verified.

Distribution: Croatia, Montenegro

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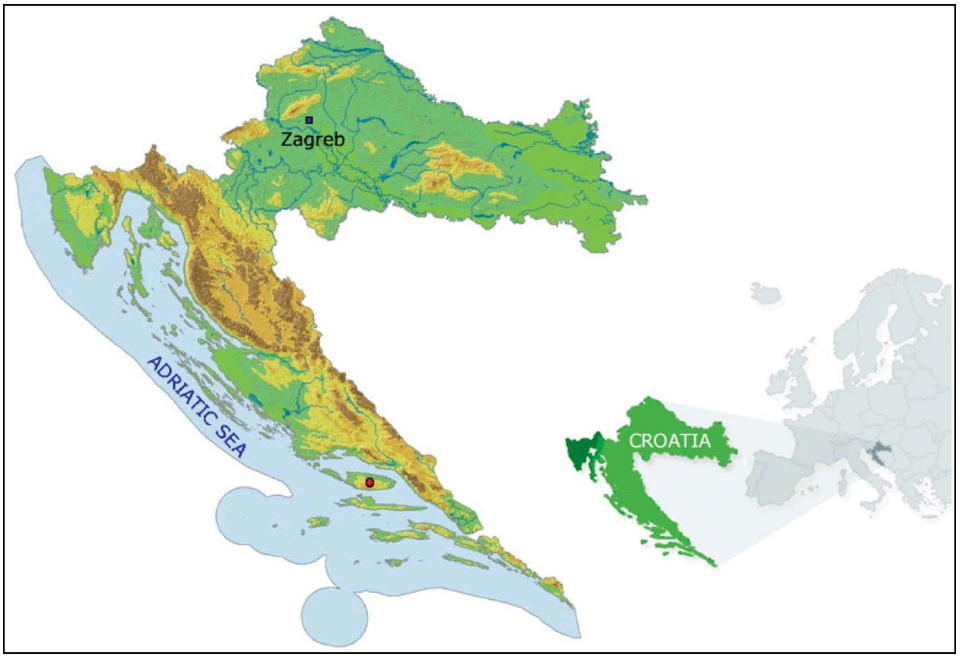

Fig. 5. Map of Croatia with a red dot marking the position of Činjadra špilja cave.

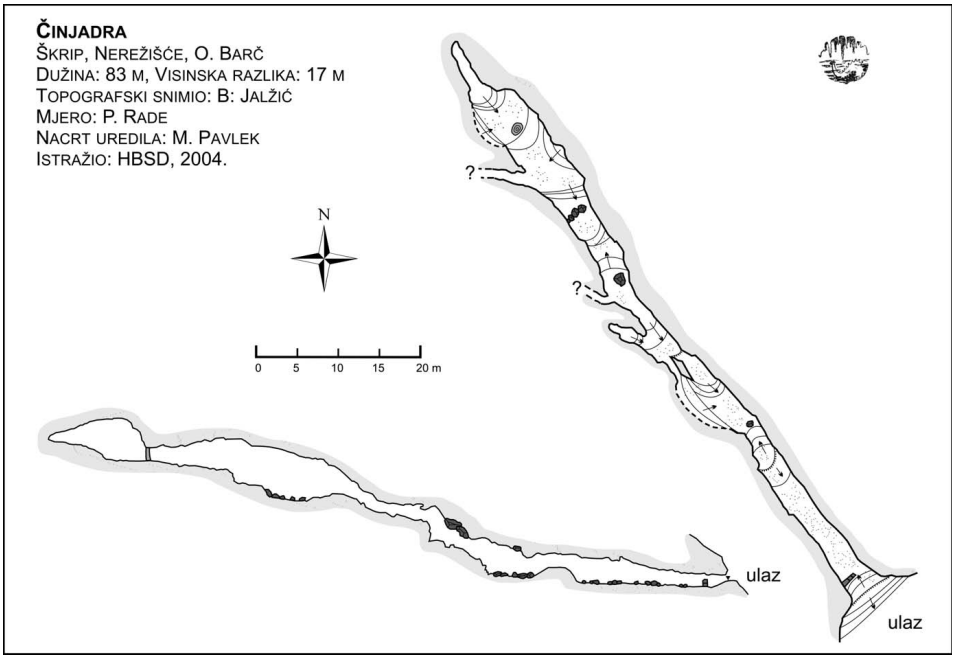

Fig. 6. Speleological scheme of Činjadra špilja cave.

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